device having a saturated gain; and

(d) changing, by the optical device, spectrum of the optical signal.

2. (AS ONCE AMENDED) A method according to claim 1, further comprising supplying an optical signal output from said optical device to a second optical fiber.

3. (AS ONCE AMENDED) A method according to claim 1, further comprising:

providing at least one optical amplifier along said first optical fiber; and

adjusting the peak power of said compressed optical signal so that the peak power becomes higher than a threshold power giving said saturated gain.

4. (AS ONCE AMENDED) A method according to claim 1, wherein:

the dispersion of said first optical fiber is normal dispersion; and

said (b) includes performing prechirping so that said optical signal has down-chirp.

5. (AS ONCE AMENDED) A method according to claim 1, wherein:

the dispersion of said first optical fiber is anomalous dispersion; and

said (b) includes performing prechirping so that said optical signal has up-chirp.

6. (AS ONCE AMENDED) A method according to claim 1, wherein said (b) includes suitably setting the dispersion of said first optical fiber and the power of said optical signal.

7. (AS ONCE AMENDED) A method according to claim 1, further comprising providing a dispersion compensator for compensating the dispersion of said first optical fiber along said first optical fiber.

8. (AS ONCE AMENDED) A method according to claim 2, further comprising providing a dispersion compensator for compensating the dispersion of said second optical fiber along said second optical fiber.

9. (AS ONCE AMENDED) A method according to claim 1, further comprising providing an optical phase conjugator in the vicinity of a point where the dispersion of said first optical

fiber is substantially equally divided.

10. (AS ONCE AMENDED) A method according to claim 2, further comprising providing an optical phase conjugator in the vicinity of a point where the dispersion of said second optical fiber is substantially equally divided.

11. (AS ONCE AMENDED) An optical device to which an optical signal compressed on the time axis as propagating in an optical fiber is supplied, comprising:

a semiconductor optical amplifier applying a gain saturated in concert with an increase in input power to said optical signal, wherein spectrum of the optical signal is changed by the semiconductor optical amplifier.

12. (AS ONCE AMENDED) An optical device according to claim 11, further comprising a light source supplying assist light having a wavelength different from the wavelength of said optical signal to said semiconductor optical amplifier.

13. (AS ONCE AMENDED) An optical device to which an optical signal compressed on the time axis as propagating in an optical fiber is supplied, comprising:

a distributed feedback (DFB) laser; and

a circuit supplying a current to said DFB laser so that said DFB laser oscillates at a first wavelength; said optical signal having a second wavelength different from said first wavelength, whereby said DFB laser applies a gain saturated in concert with an increase in input power to said optical signal, wherein said optical device changing spectrum of the optical signal.

14. (AS ONCE AMENDED) An optical device according to claim 13, further comprising a light source supplying assist light having a third wavelength different from said first wavelength to said DFB laser.

15. (AS ONCE AMENDED) A system comprising:

an optical transmitter outputting an optical signal;

a first optical fiber provided so that said optical signal is compressed on the time axis as propagating in said first optical fiber; and